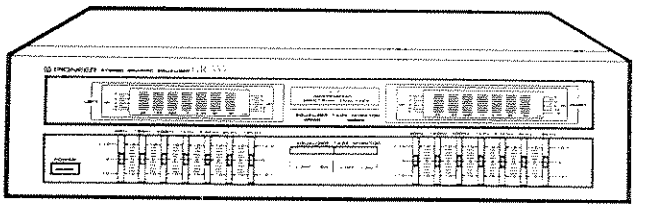
Operating Instructions

GRAPHIC EQUALIZER

GR-555



Thank you for buying this Pioneer product.
Please read through these operating instructions so you will know how to operate your model properly. After you have finished reading the instructions, put them away in a safe place for future reference.
In some countries or regions, the shape of the power plug and power outlet may sometimes differ from that shown in the explanatory drawings. However, the method of connecting and operating the unit is the same.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT NOTICE
[For U.S. and Canadian models]

The serial number for this equipment is located on the rear panel. Please write this serial number on your enclosed warranty card and keep it in a secure area. This is for your security.

[For Canadian model]

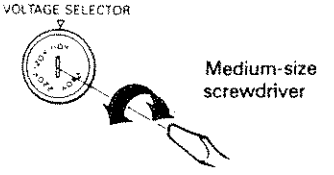
CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

LINE VOLTAGE SELECTOR SWITCH

Only multi-voltage models are provided with this switch. U.S., Canadian, European, U.K., and Australian models are not provided with this switch.
Mains voltages in Saudi Arabia are 127V and 220V only. Never use this model with 110V setting in Saudi Arabia.
You will find the line voltage selector switch on the rear panel. Before your model is shipped from the factory, the switch is set to the power requirements of the destination; nevertheless, you should check that it is set properly before plugging the power cord into the AC outlet. If the voltage is not properly set, or if you move to an area where the voltage requirements differ, adjust the selector switch as follows. Before adjusting, disconnect the power cord.

1. Use a medium-size screwdriver.
2. Insert the screwdriver into the groove of the selector switch and turn it so that the power voltage marking of your area points to the arrow.



CONTENTS

Connection I 3
Connection II 4
Signal path diagram 5
Rear Panel Facilities 10
Front Panel Facilities 11
Using the Equalizer Controls 12
Operations 13
When Playing Records 13
When Recording Broadcasts 14
When Playing Back Tapes 14
When Editing Tapes 15
Functioning of Switches 15
Troubleshooting 16
Specifications 16

PIONEER
The Art of Entertainment

IMPORTANT 1

The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT 2

If the apparatus is fitted with AC mains power outlet(s), see REAR PANEL FACILITIES for convenient connection of additional Hi-Fi component(s). Make all connections to the AC outlet(s) and the signal terminals first. Connect the plug to the wall socket last (make sure that the power switch is off.).

FOR USE IN THE UNITED KINGDOM

WARNING: This plug must only be connected to electronic apparatus equipped with suitable sockets. If not, cut off the plug and fit an appropriate type in accordance with the instructions below.
The cut-off plug must be disposed of as an electrical shock hazard could exist if connected to a socket outlet.

The wires in this mains lead are coloured in accordance with the following code:
Blue: Neutral
Brown: Live
As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured marking identifying the terminals in your plug proceed as follows:
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.
Do not connect either wire to the earth terminal of a three pin plug.

SAFETY INSTRUCTIONS

READ INSTRUCTIONS – All the safety and operating instructions should be read before the appliance is operated.

RETAIN INSTRUCTIONS – The operating instructions should be retained for future reference.

HEED WARNING – All warnings on the appliance and in the operating instructions should be adhered to.

FOLLOW INSTRUCTIONS – All operating and use instructions should be followed.

WATER AND MOISTURE – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

LOCATION – The appliance should be installed in a stable location.

WALL OR CEILING MOUNTING – The appliance should not be mounted to a wall or ceiling.

VENTILATION – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

HEAT – The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

POWER SOURCES – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

POWER-CORD PROTECTION – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

POLARIZATION – If your purchased product is provided with a polarized power plug, please read the following instructions. This product is equipped with a polarized alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

CLEANING – The appliance should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the cabinet.

POWER LINES – An outdoor antenna should be located away from power lines.

NONUSE PERIODS – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

OBJECT AND LIQUID ENTRY – Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

DAMAGE REQUIRING SERVICE – The appliance should be serviced by a Pioneer authorized service center or qualified service personnel when:

- The power-supply cord or the plug has been damaged.
- Objects have fallen, or liquid has been spilled into the appliance.
- The appliance has been exposed to rain.
- The appliance does not appear to operate normally or exhibits a marked change in performance.
- The appliance has been dropped or the enclosure damaged.

SERVICING – The user should not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, contact the nearest Pioneer authorized service center.

OUTDOOR ANTENNA GROUNDING – If an outside antenna is connected to the antenna terminal, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges.
In the U.S.A. section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Fig. A.

CART – An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

NEC – NATIONAL ELECTRIC CODE

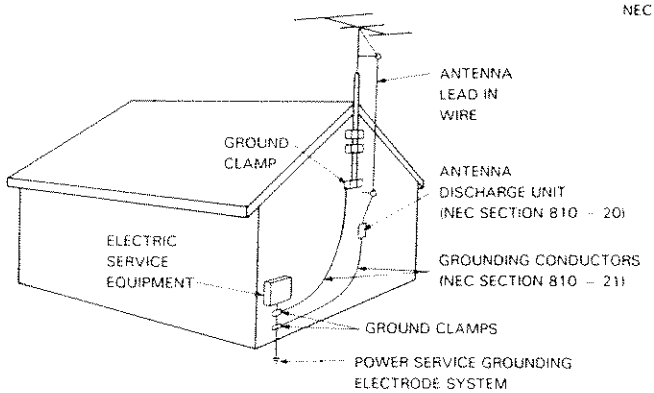


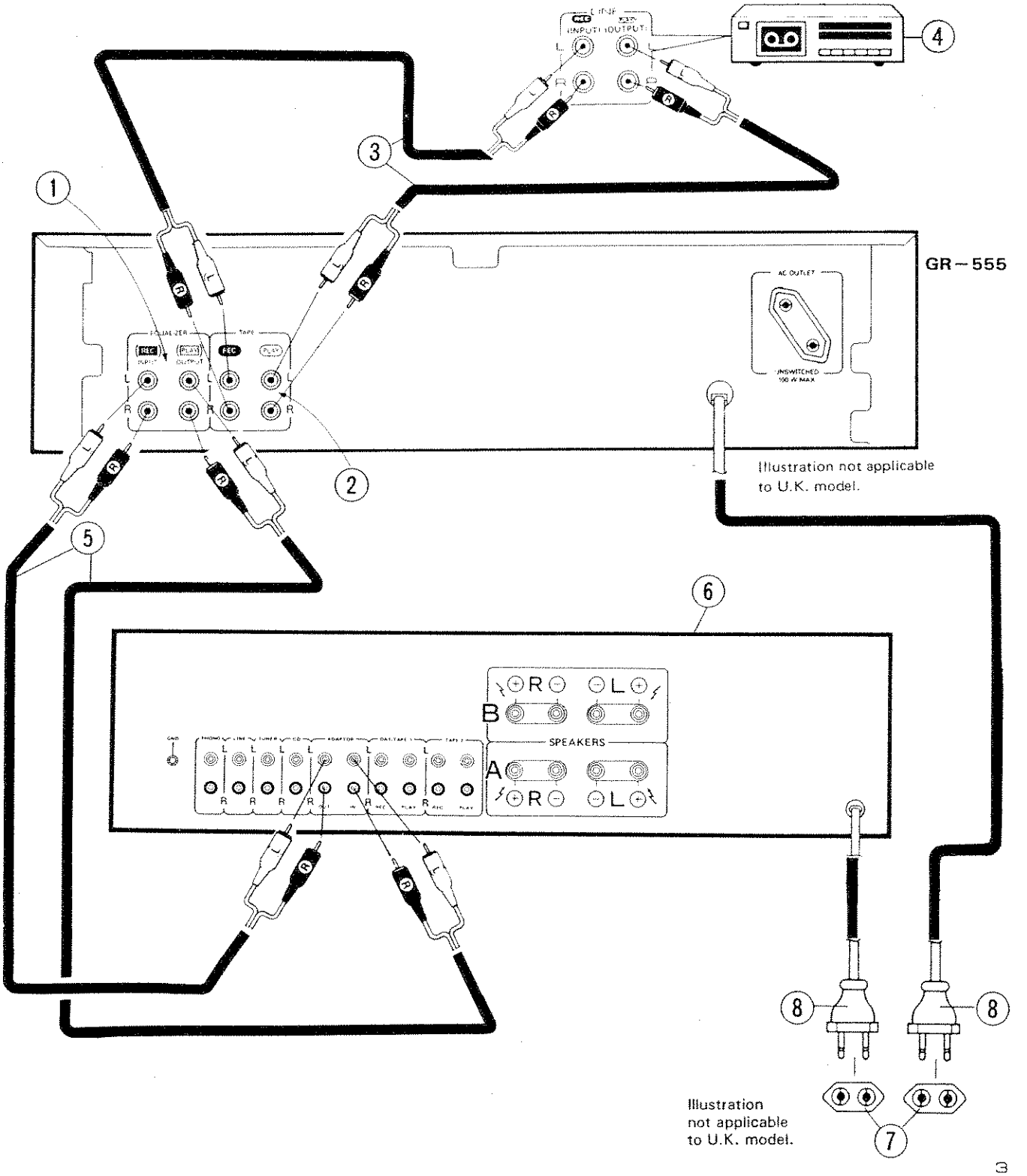
FIG. A

CONNECTION I

When amplifier has ADAPTOR jacks.

When connecting components, be sure that all power switches are OFF.
This is an example of the connections made when using the GR-555 in conjunction with PIONEER's components. For details, consult the Operating Instructions of the respective components.

① EQUALIZER jacks
② TAPE jacks
③ Accessory cord provided with the tape deck
④ Tape deck (Tape deck 2)
⑤ Accessory cord provided with GR-555
⑥ Stereo amplifier
⑦ AC wall socket
⑧ Power plug

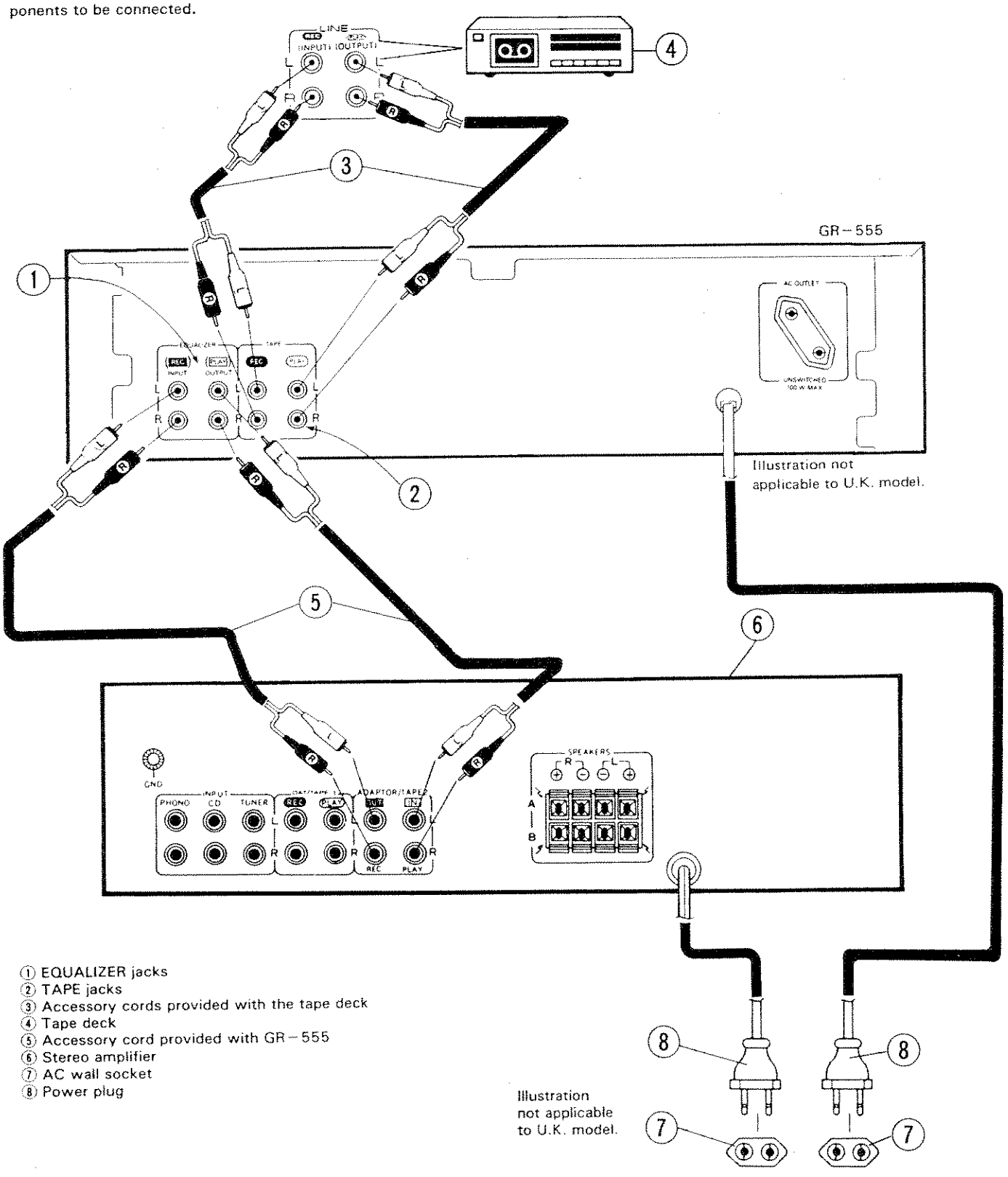


<ARB1121>

CONNECTION II

When amplifier has ADAPTOR/TAPE 2 jacks.

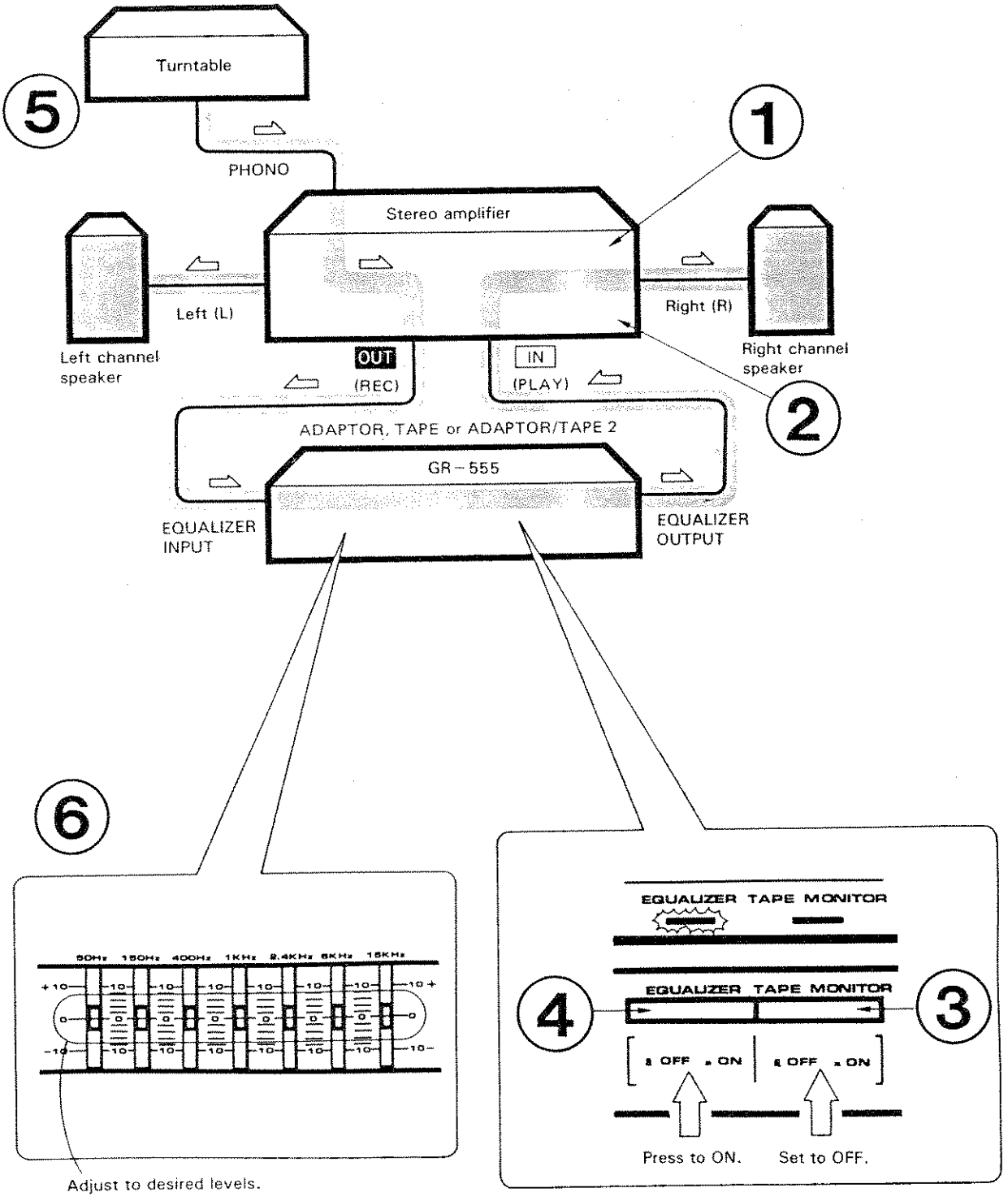
When connecting components, be sure that all power switches are OFF.
For details, consult the Operating Instructions for the components to be connected.



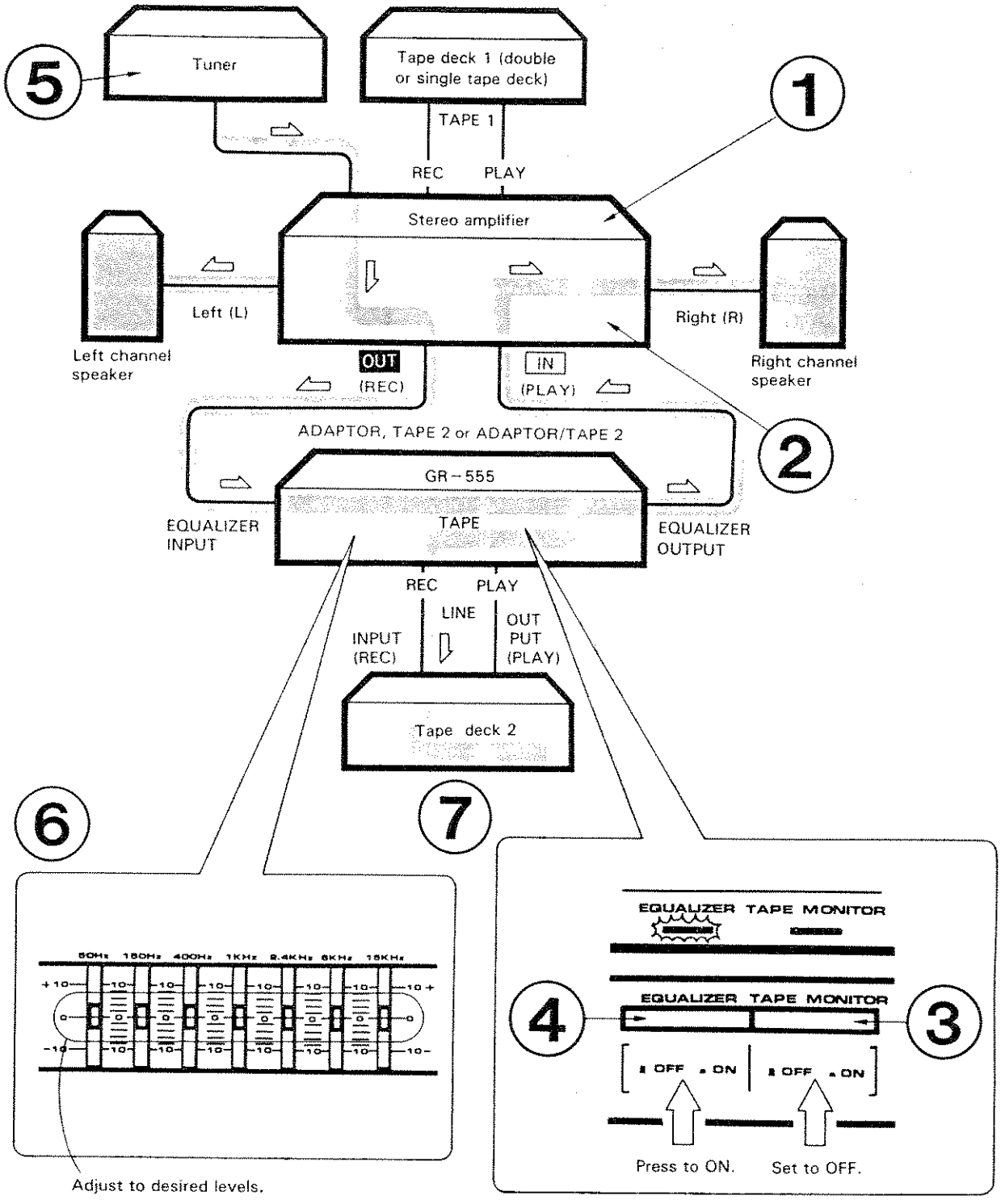
① EQUALIZER jacks
② TAPE jacks
③ Accessory cords provided with the tape deck
④ Tape deck
⑤ Accessory cord provided with GR-555
⑥ Stereo amplifier
⑦ AC wall socket
⑧ Power plug

SIGNAL PATH DIAGRAM

WHEN PLAYING RECORDS **(Refer to page 13)**

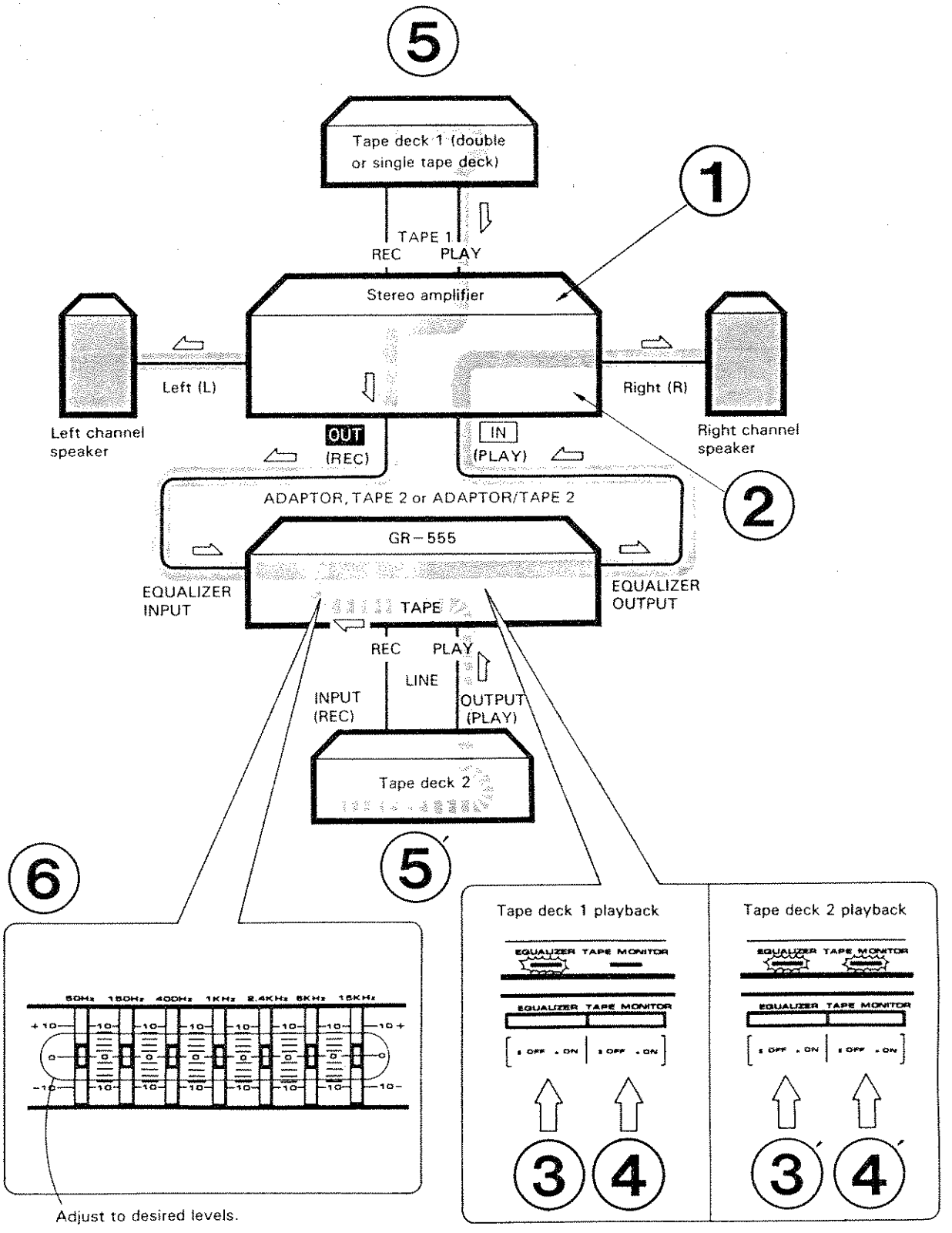


WHEN RECORDING BROADCASTS (Refer to page 14)



WHEN PLAYING BACK TAPES

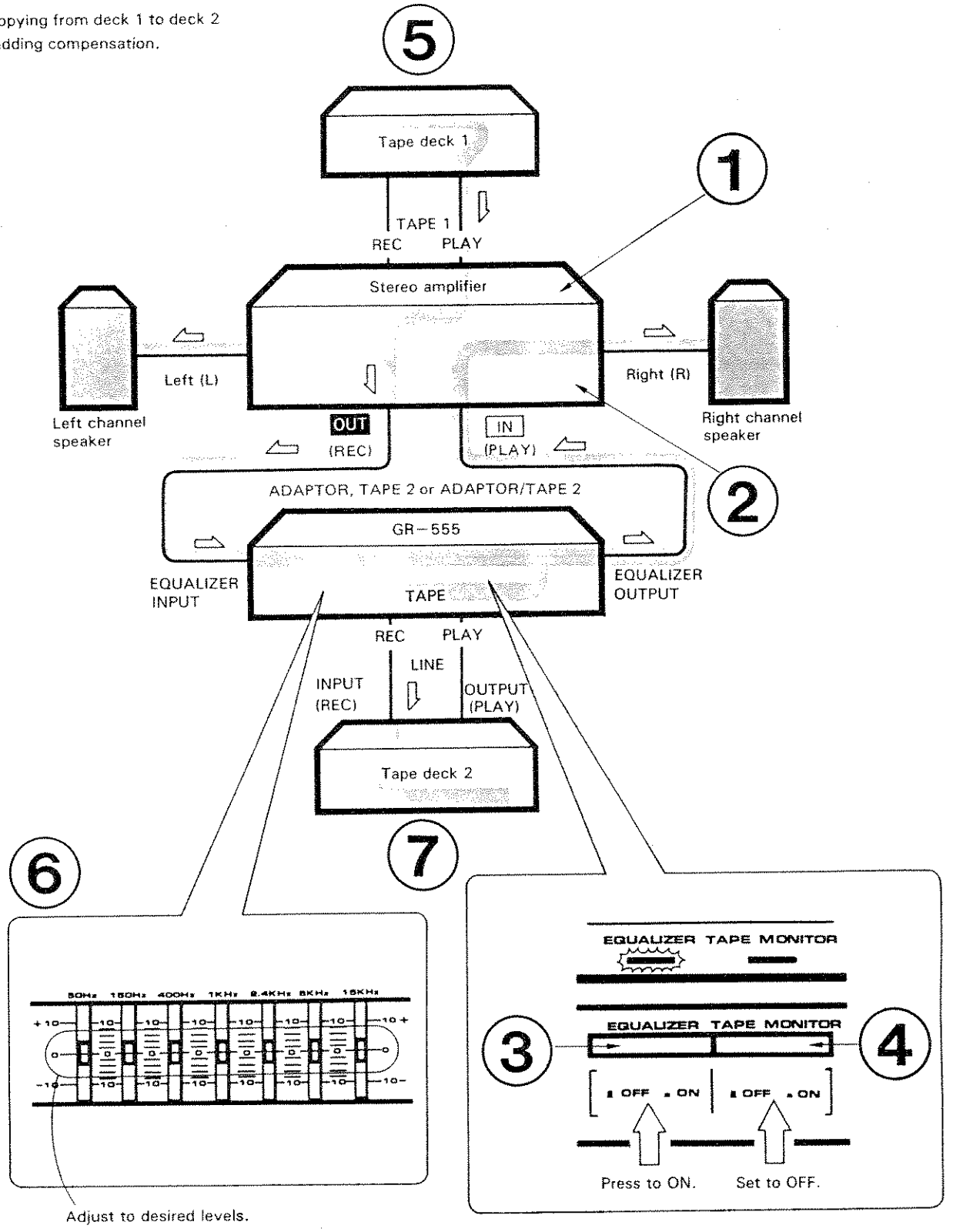
(Refer to page 14)



WHEN EDITING TAPES

(Refer to page 15)

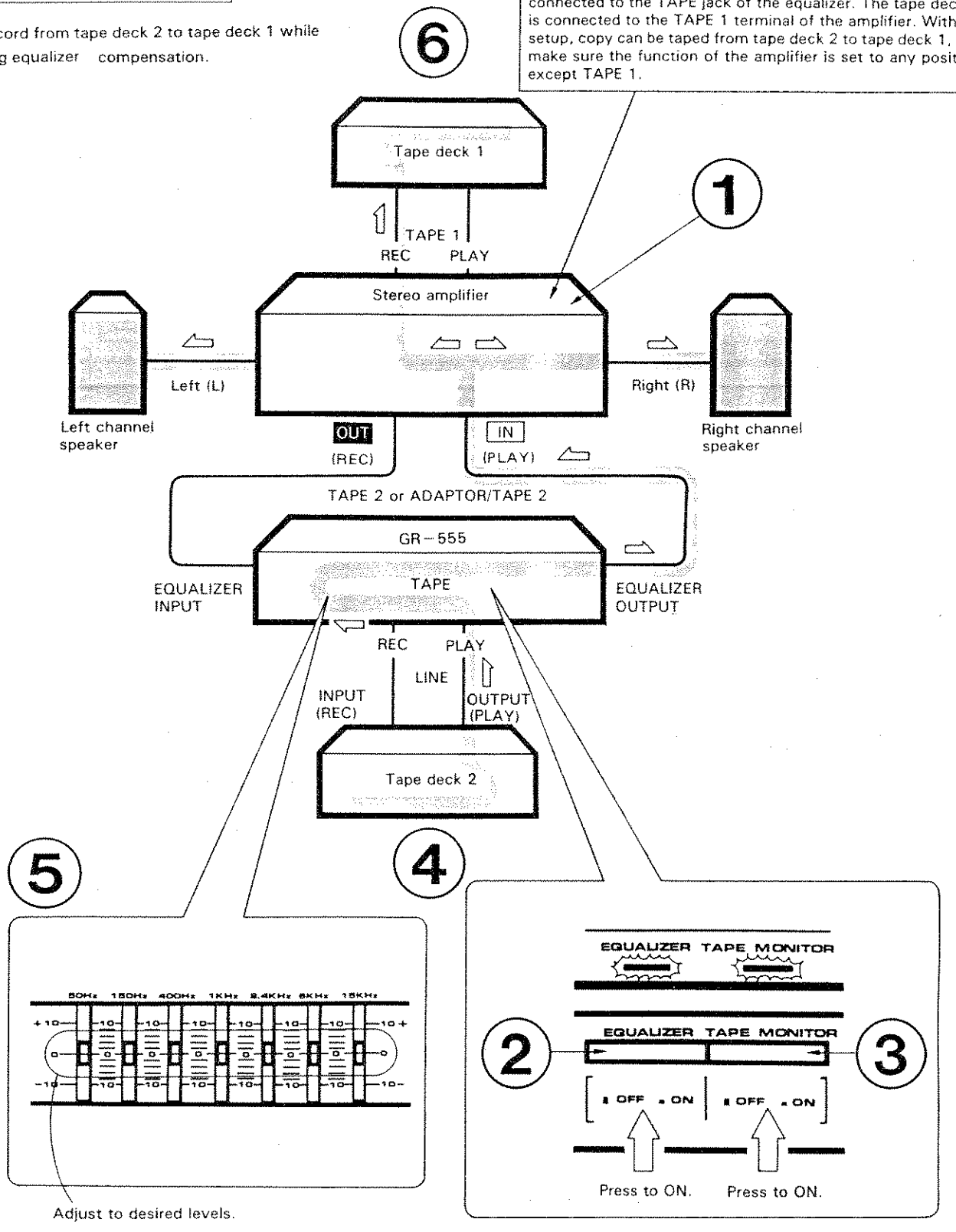
Tape copying from deck 1 to deck 2 while adding compensation.



WHEN EDITING TAPES (Refer to page 15)

To record from tape deck 2 to tape deck 1 while adding equalizer compensation.

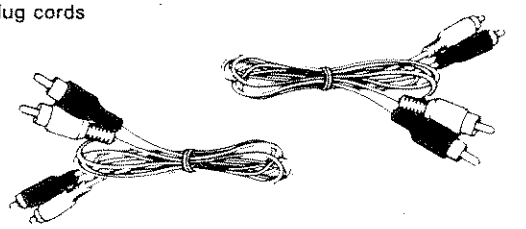
In this illustration, the graphic equalizer is connected to the ADAPTOR/TAPE 2 jack of the amplifier, and the tape deck 2 is connected to the TAPE jack of the equalizer. The tape deck 1 is connected to the TAPE 1 terminal of the amplifier. With this setup, copy can be taped from tape deck 2 to tape deck 1, but make sure the function of the amplifier is set to any position except TAPE 1.

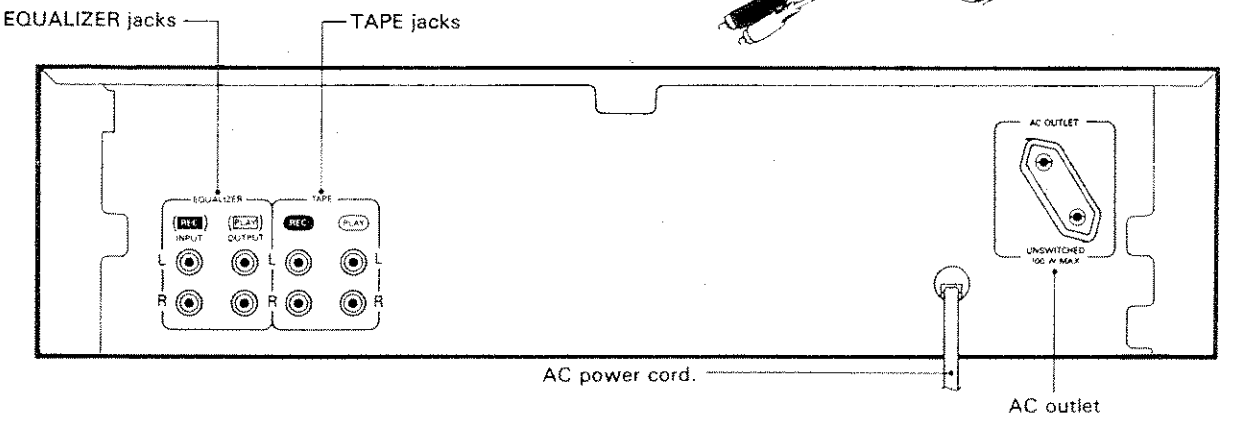


REAR PANEL FACILITIES

Two pin-plug cords are included as accessories. These are used to connect the graphic equalizer to your stereo amplifier. The white plug is for the left channel, and the red plug is for the right channel.

Pin-plug cords





EQUALIZER jacks

Connect to stereo amplifier.

TAPE jacks

Connect to tape deck.

AC OUTLET (UNSWITCHED 100 W MAX)

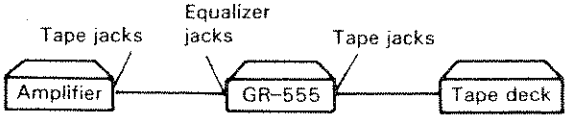
Power flows continually to this outlet, regardless of whether the equalizer is switched ON or STANDBY. Electrical power consumption of the connected equipment should not exceed 100 W. The equalizer should be disconnected by removing the mains plug from the AC wall socket when not in regular use, e.g. while on vacation.

NOTE:
Do not connect appliances with high power consumption such as heaters, irons, or television sets to the AC OUTLET in order to avoid overheating or fire risk.
This can cause the equalizer to malfunction.

STEREO AMPLIFIER TAPE JACKS

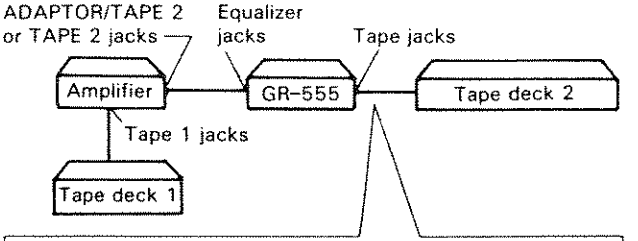
When the stereo amplifier has one set of tape jacks:

Connect the INPUT jacks to the stereo amplifier's TAPE REC jacks, and connect OUTPUT jacks to the stereo amplifier's TAPE PLAY jacks.



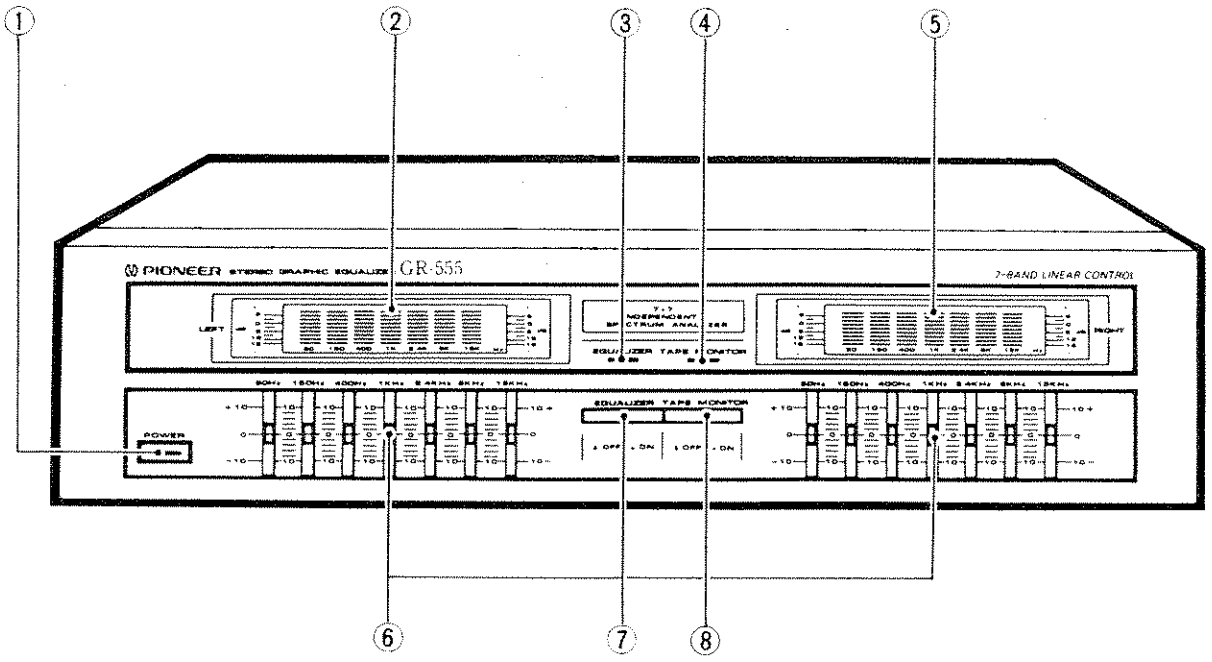
When the stereo amplifier has two sets of tape jacks:

Connect the INPUT jacks to the stereo amplifier's ADAPTOR/TAPE 2 or TAPE 2 [REC] jacks, and connect OUTPUT jacks to the stereo amplifier's ADAPTOR/TAPE 2 or TAPE 2 [PLAY] jacks.



Connect TAPE REC jacks to the tape deck 2's LINE (REC) jacks.
Connect TAPE PLAY jacks to the tape deck 2's LINE (PLAY) jacks.

FRONT PANEL FACILITIES



① POWER Switch (POWER STANDBY/ON)

When this switch is set to the ON position, power is supplied to the unit's main circuits (the spectrum analyzer frequency display light.) The unit's power switch is geared to selecting the transformer's secondary and so even at the STANDBY position, the unit's circuitry will work as long as the power cord is connected to the AC power outlet.
Disconnect the power cord from the AC power outlet when you do not plan to use the unit for a long period of time.

② LEFT CHANNEL spectrum analyzer

Displays the amplification of the output signal compensated with this instrument.

③ EQUALIZER indicator

④ TAPE MONITOR indicator

⑤ RIGHT CHANNEL spectrum analyzer

Displays the amplification of the output signal compensated with this instrument.

⑥ EQUALIZER CONTROLS

These are equalizer controls for the bands 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz and 15 kHz.
When the equalizer switch has been set to ON, these controls may be adjusted. When a control is raised upwards from the "0" position, the frequency band corresponding to that control will be emphasized; when the control is lowered, the frequency band will be attenuated. These controls can be used independently for right and left channels.

⑦ EQUALIZER Switch

When this switch is pressed, the EQUALIZER indicator lights and its functions become operative. When pressed once again, this indicator goes out and its functions become inoperative. Use this switch in the following manner:

ON: When using the equalizer to add sound compensation to program sources (FM broadcasts, records, tape playback, etc.).

OFF: When not using the equalizer, normal play back or recording program sources will be performed without compensation.

NOTE:
Even when performing playback without using the functions of this component, if the power switch is OFF, and the equalizer switch is OFF, there will still be sound. The unit's tape monitor switch can also be switched ON or OFF. (TAPE MONITOR indicator will not light.)

⑧ TAPE MONITOR Switch

When this switch is pressed, the TAPE MONITOR indicator lights. When pressed again, the indicator goes out. Use this switch in the following manner:

ON: When using the tape deck connected to the equalizer's tape terminals to play back with or without adding sound compensation.

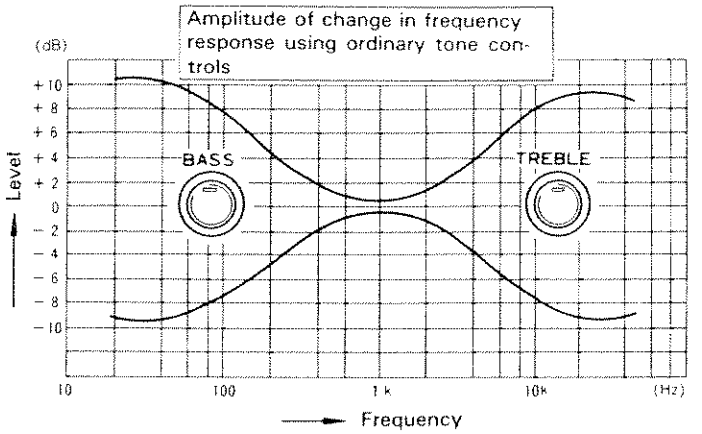
OFF: When using the components (tuner, turntable, tape deck) connected to the stereo amplifier to play back music with or without adding sound compensations.

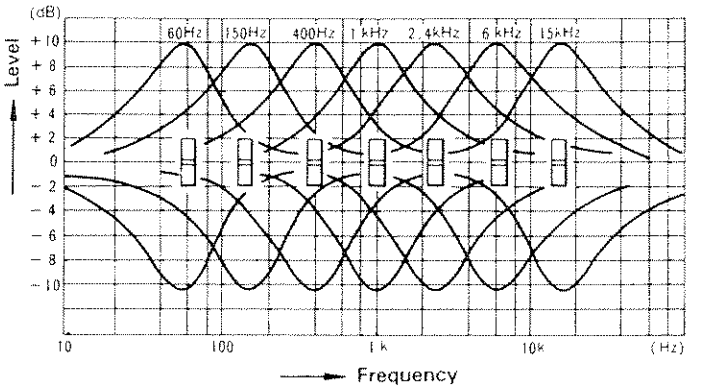
NOTE:
Pressing the TAPE MONITOR switch ON/OFF during recording will cause breaks in the recording. To avoid this, do not press the tape monitor switch while recording.

NOTE:
In order to protect your speakers from damage resulting from excessively large inputs, whenever increasing high-frequency sounds over a wide range, be sure not to raise your amplifier's sound volume too high.

USING THE EQUALIZER CONTROLS

The graphic equalizer divides the music source into a number of frequency bands and boosts or attenuates the level at each of the frequencies, enabling much finer sound quality adjustments than ordinary tone controls and sound field compensation.
Some examples of operation are given below.

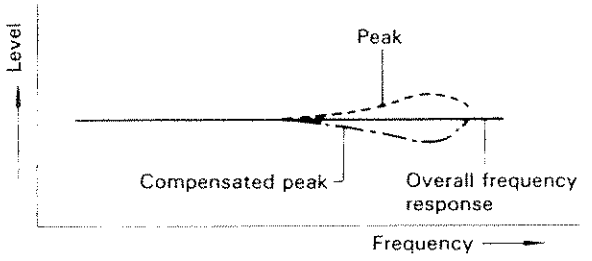




Amplitude of change in frequency response using graphic equalizer controls

1 COMPENSATING FOR THE PLAYBACK FREQUENCY RESPONSE

The frequency response of a phono-cartridge or speaker has peaks and dips in the high range and low range. It can be made flat by adjusting finely the controls on the graphic equalizer.



2 IMPROVING THE ACOUSTICS OF THE LISTENING ROOM

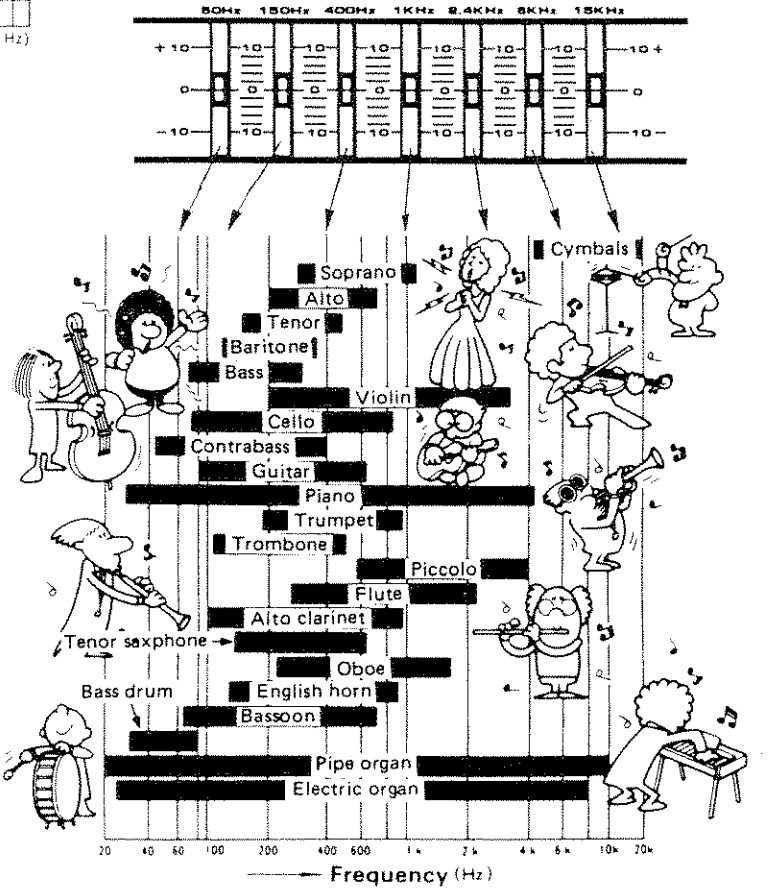
The ideal listening room is one where the transmission frequency response is flat. In actual fact, however, the acoustics vary depending on the effects of the structure of the room and its furniture, and on the listening position.

Although there is minimal treble attenuation in a listening room surrounded by hard walls and windows and having a bare floor, the bass sounds are reflected to a great extent.
In rooms like these, turn up the 150 Hz control slightly.
In a room surrounded by drapes and with carpets on the floor, there is minimal reflection of the sound and both the bass and the treble are absorbed.
In rooms like these, turn up the 60 Hz control slightly and turn up the frequency controls above 2.4 kHz gradually.
The above examples are extremely general.
The acoustics undergoes a change in accordance with the furniture in the listening room, the height of the ceiling and the listening position, among other factors.
Play the music and try operating each of the controls to produce the best effect.

3 COLORING THE REPRODUCED SOUND

All instruments and vocals have their own frequency band, as shown in the figure.
By moving the controls up or down, the volume of the instruments preferred can be boosted or other instruments can be attenuated.
For instance, it is possible to boost the 60 Hz frequency and give the bass drum a greater "punch" or boost the 1 kHz frequency and position the vocals at the front. When the 6 kHz frequency is boosted, the cymbals and "high hat" sound much clearer.
Instruments and vocals have a great many harmonic components along with the fundamental frequency band and so you can have lots of fun operating the 7 controls to achieve the sound of your choice.

NOTE:
In order to protect the speakers from damage resulting from power overload, do not excessively increase the stereo amplifier's volume level when boosting the treble range on this unit.



[4] RECORDING TECHNIQUES USING THE GRAPHIC EQUALIZER

Coloring the sound of vocals or instruments

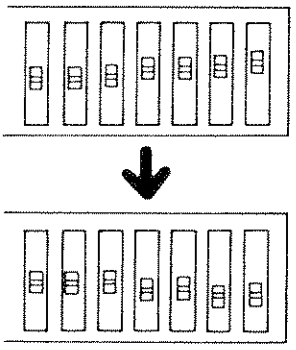
The sound of vocals and instruments can be colored at will by operating the controls. For instance, when the 400Hz, 1kHz and 2.4kHz controls are raised and the other controls lowered, people's voices sound as if heard on a telephone.

Preventing howl during mixed play

Any irritating howl during play can be prevented by lowering the knob corresponding to the frequency band in which the howl occurs.

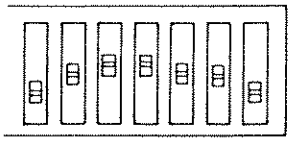
Noise can be reduced during recording and playback

When the high-range controls are boosted in step fashion during recording and then lowered in reverse fashion during playback, tape hiss and other high-range noise can be reduced.



Creating recorded tapes most compatible with the playback equipment

A sound with a greater "punch" can be recorded for playback on car stereo equipment if the ultra-low-range, which is hard to hear, is cut out and the mid-range is boosted.



OPERATIONS

WHEN PLAYING RECORDS

■ COMBINING THE EQUALIZER WITH RECORD PLAYBACK

[Refer to figure on page 5]

Perform the following operations in numerical order.

① Set amplifier's Function switch to PHONO (or INPUT SELECTOR switch to PHONO).

② Set amplifier's ADAPTOR/TAPE 2 switch or TAPE 2 switch (or TAPE MONITOR switch) to ON.)

③ Set TAPE MONITOR switch to OFF.

④ Set EQUALIZER switch to ON.

⑤ Play back record.

⑥ Adjust equalizer controls.

WHEN RECORDING BROADCASTS

* When connecting this unit to the TAPE 2 terminals of the amplifier, depending on the type of amplifier used, it may not be possible to make a recording via this unit.

■ USING THE EQUALIZER WHILE LISTENING TO BROADCASTS AND RECORDING THE RESULTS.

[Refer to figure on page 6]

Perform the following operations in numerical order.

When tape deck 2 connected to the GR-555 is set to the recording mode, the contents of the equalizer-compensated broadcast can be recorded on cassette tape.

① Set amplifier's Function switch to TUNER (or INPUT SELECTOR switch to TUNER).

(② Set amplifier's ADAPTOR, TAPE 2 or ADAPTOR/TAPE 2 switch (or TAPE MONITOR switch) to ON.)

③ Set TAPE MONITIR switch to OFF.

④ Set EQUALIZER switch to ON.

⑤ Tune in desired station.

⑥ Adjust equalizer controls.

⑦ Record results on tape.

WHEN PLAYING BACK TAPES

■ COMBINING THE EQUALIZER WITH TAPE PLAYBACK

[Refer to figure on page 7]

Perform the following operations in numerical order.

① Set amplifier's Function switch to TAPE 1 (or INPUT SELECTOR switch to TAPE 1, or TAPE (1) MONITOR switch to ON).

(② Set amplifier's ADAPTOR, TAPE 2 or ADAPTOR/TAPE 2 switch (or TAPE MONITOR switch) to ON.)

③, ④ Set TAPE MONITOR switch and EQUALIZER switch.

[Tape deck 1 playback]
③ Press to ON.
④ Set to OFF.

[Tape deck 2 playback]
③' Press to ON.
④' Press to ON.

⑤ Play back tape.
(Tape deck 1 playback)

⑤' Play back tape.
(Tape deck 2 playback)

⑥ Adjust equalizer controls.

WHEN EDITING TAPES

■ USING THE EQUALIZER WHEN PERFORMING TAPE EDITING

[Refer to figure on page 8]
Tape copying from deck 1 to deck 2 while adding compensation.
Perform the following operations in numerical order.

① Set amplifier's Function switch to TAPE 1 (or INPUT SELECTOR switch to TAPE 1).

② Set amplifier's ADAPTOR, TAPE 2 or ADAPTOR/TAPE 2 switch (or TAPE MONITOR switch) to ON.

③ Set EQUALIZER switch to ON.

④ Set TAPE MONITOR switch to OFF.

⑤ Play back tape.

⑥ Adjust equalizer controls.

⑦ Set to recording mode.

[Refer to figure on page 9]
To record from tape deck 2 to tape deck 1 while adding equalizer compensation

* Depending on the type of amplifier that is used, some of the explanations given here may not apply.

Perform the following operations in numerical order.

① Set amplifier's ADAPTOR/TAPE 2 switch (or TAPE MONITOR switch) to ON.
When using the amplifier with REC SELECTOR switch:
REC SELECTOR → TAPE COPY 2 ▶ 1
TAPE 2 monitor switch → ON

② Set EQUALIZER switch to ON.

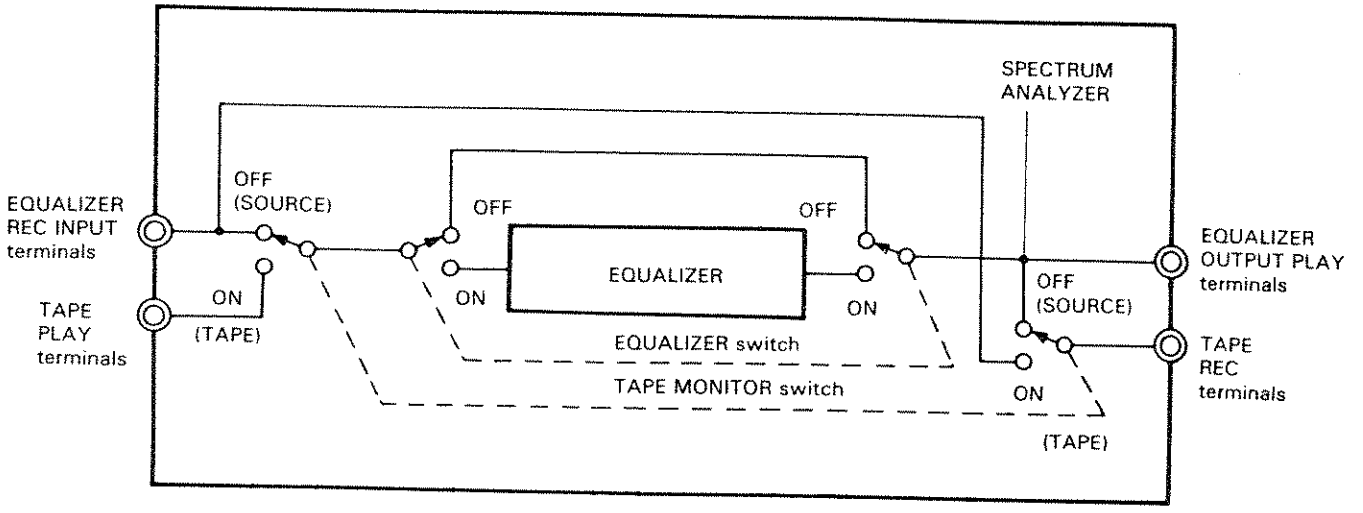
③ Set TAPE MONITOR switch to ON.

④ Play back tape.

⑤ Adjust equalizer controls.

⑥ Set to recording mode.

FUNCTIONING OF SWITCHES



Above diagram shows L channel only.

TROUBLESHOOTING

If you think the unit is malfunctioning, please perform the following checks. Often, incorrect operating procedures are to blame. The cause may also lie outside the unit itself. Check the other components and electric appliances being used at the same time. If the problem is not remedied after following the check-list below, contact your dealer or the nearest Pioneer Service Center.

SYMPTOM	CAUSE	REMEDY
No sound.	• Power switch is OFF. • Power cord is not connected. • Tape monitor switch is ON. • Incorrect operation of stereo amplifier. • Connecting cords are disconnected.	• Turn power switch on. • Plug in power cord. • Set tape monitor switch to OFF. • Check the settings of the amplifier switches (Consult the amplifiers operating instructions). • Connect the cords properly (consult page 3, 4 for proper connecting procedures).
No graphic equalizer effects.	• Equalizer switch is set to OFF. • Stereo amplifier's tape monitor switch or the ADAPTOR/TAPE 2 (or TAPE 2) switch is OFF.	• Set to ON. • Set to ON.

SPECIFICATIONS

Input terminals (reference input level/input impedance)
INPUT, TAPE PLAY ..... 150 mV/50 kΩ
Gain ..... 0 dB
Output terminals
(reference output level/output impedance)
OUTPUT ..... 150 mV/2.2 kΩ
REC OUT ..... 150 mV
Harmonic distortion (20 Hz ~ 20 kHz, output 1V)
..... 0.03%
Frequency response
INPUT, TAPE PLAY ..... 10 Hz ~ 50 kHz ±3 dB
Equalizer bands
Center frequencies
..... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
Variable range ..... ±10 dB
SN ratio (IHF, A network, short circuit, 1V)
INPUT, TAPE PLAY ..... 104 dB
SN ratio (DIN)
INPUT, TAPE PLAY ..... 85 dB
Spectrum analyzer
Center Frequencies
..... 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.4 kHz, 6 kHz, 15 kHz
Other ..... 3 dB Step, 8 points

Miscellaneous

Power requirements
U.K. model ..... a.c 240 Volts~, 50/60 Hz
U.S. and Canadian models ..... AC 120V, 60Hz
Other destination model ..... AC 110V/120−127V/220V/240V (switchable), 50/60Hz
Power consumption 15W
Dimensions ..... 420 (W) x 105 (H) x 334 (D) mm
16 − 9/16 (W) x 4 − 1/8 (H) x 13 − 1/8 (D) in
Weight ..... 4.2 kg (9 lb 4 oz)

Accessories

Pin-plug cords 2
Operating Instructions 1

Specifications and design subject to possible change without notice due to improvements.

Published by Pioneer Electronic Corporation.
Copyright © 1990 Pioneer Electronic Corporation.
All rights reserved.

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS [USA] INC. 2265 East 220th Street, Long Beach, California 90810, U.S.A.
P.O. BOX 1720, Long Beach, California 90801, U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3, Canada
PIONEER ELECTRONIC [EUROPE] N.V. Keetberglaan 1, 2740 Beveren, Belgium, TEL: 03/750.05.11
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia, TEL: [03] 580-9911

<92G01YF5C30>

Printed in Japan <ARB1121-B>